FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

April 16 to April 22, 2017 (Week 16)

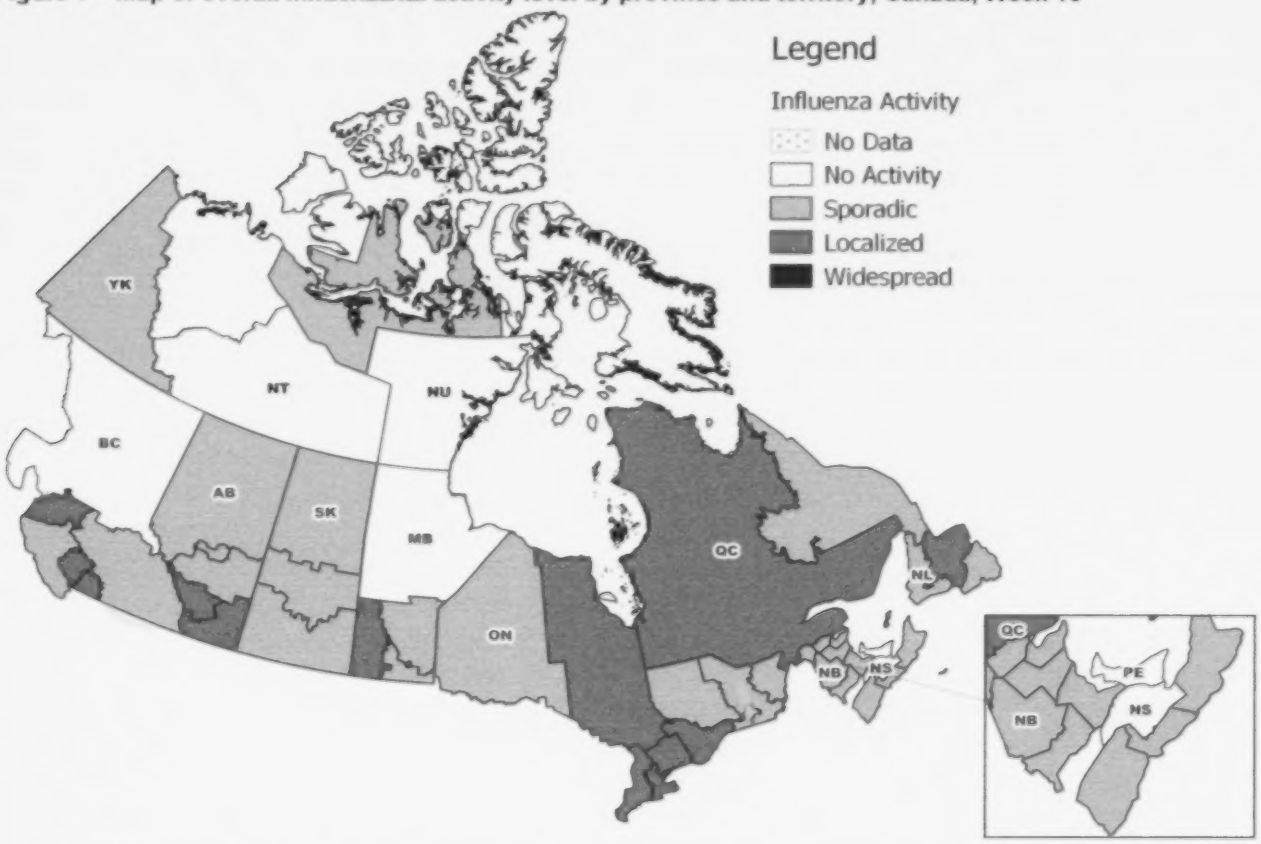
Overall Summary

- Overall, influenza activity continues to decline slowly in Canada.
- In week 16, influenza B activity continued to exceed influenza A activity, with 50% or more of influenza laboratory detections, hospitalizations and outbreaks associated with influenza B.
- In keeping with the predominant circulation of A(H3N2) this season, the majority of laboratory detections, hospitalizations and deaths have been among adults aged 65+ years.
- For more information on the flu, see our Flu(influenza) web page.

Influenza/Influenza-like Illness (ILI) Activity (geographic spread)

In week 16, eight regions across six provinces and territories reported no influenza or influenza-like illness activity. Sporadic influenza activity was reported in 32 regions across 11 provinces and territories. Localized activity was reported in 13 regions across six provinces. For more details on a specific region, click on the map.

Figure 1 – Map of overall influenza/ILI activity level by province and territory, Canada, Week 16

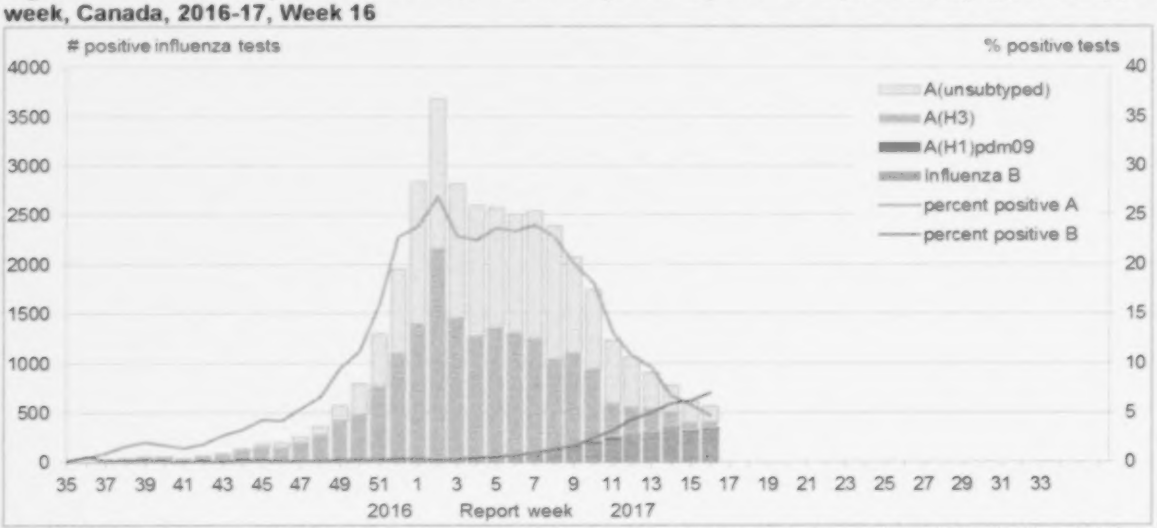


Note: Influenza/ILI activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates and reported outbreaks. Please refer to detailed definitions at the end of the report. Maps from previous weeks, including any retrospective updates, are available in the mapping feature found in the Weekly Influenza Reports.

Laboratory Confirmed Influenza Detections

In week 16, the number of tests positive for influenza (568) declined slightly compared to the previous week. The percentage of tests positive (11.6%) was similar to the previous week with an increasing proportion of influenza B (60% in week 16). However, the number of influenza B detections remains low compared to the same time period in recent seasons. For data on other respiratory virus detections, see the Respiratory Virus Detections in Canada Report on the Public Health Agency of Canada (PHAC) website.

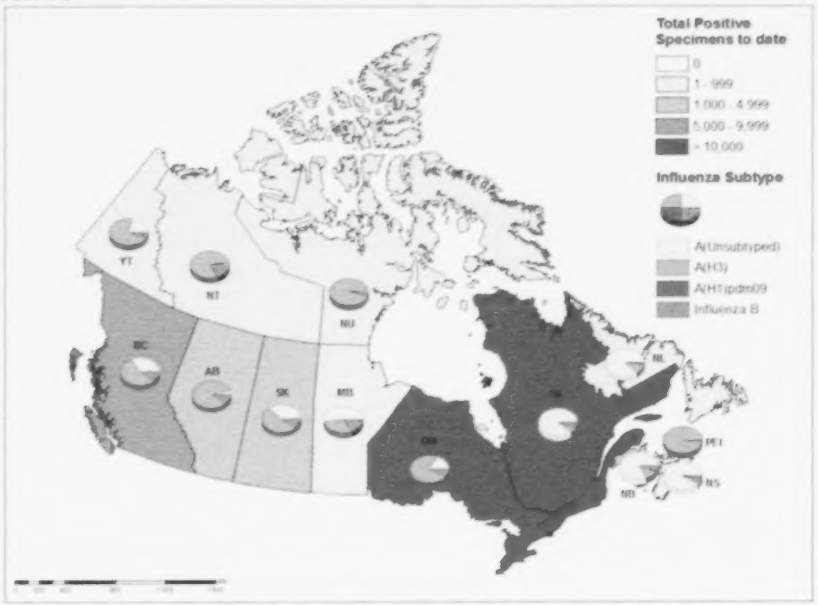
Figure 2 – Number of positive influenza tests and percentage of tests positive, by type, subtype and report week, Canada, 2016-17, Week 16



The shaded area indicates weeks where the positivity rate was at least 5% and a minimum of 15 positive tests were observed, signalling the period of seasonal influenza activity.

To date this season, 37,152 laboratory confirmed influenza detections have been reported, of which 92% have been influenza A. Influenza A(H3N2) has been the most common subtype detected this season. For more detailed weekly and cumulative influenza data, see the text descriptions for Figures 2 and 3 or the Respiratory Virus Detections in Canada Report.

Figure 3 – Cumulative numbers of positive influenza specimens by type/subtype and province/territory, Canada, 2016-17, Week 16



To date this season, detailed information on age and type/subtype has been received for 25,526 laboratory-confirmed influenza cases (Table 1). Among cases with reported age and type/subtype information, adults aged 65+ accounted for half of the reported influenza cases. Cases of influenza A(H3N2) were reported predominantly among adults aged 65+ (49% of cases), followed by adults aged 20-64 (34%) and children 0-19 years (17%). Cases of influenza B have been distributed more evenly across age-groups, with adults aged 65+ representing 33% of cases, adults aged 20-64 41% of cases, and children aged 0-19 years 26% of cases.

Table 1 – Weekly and cumulative numbers of positive influenza specimens by type, subtype and age-group reported through case-based laboratory reporting[1], Canada, 2016-17, Week 16

Age groups (years)	Week (April 16 to April 22, 2017)					Cumulative (August 28, 2016 to April 22, 2017)						
	Influenza A				B	Influenza A				B	Influenza A and B	
	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	A Total	A(H1) pdm09	A(H3)	A (UnS)[3]	Total	#	%
0-4	12	0	0	12	11	2187	13	820	1354	178	2365	9%
5-19	5	0	0	5	23	2183	10	1072	1101	342	2525	10%
20-44	17	0	0	17	35	3399	22	1794	1583	348	3747	15%
45-64	>25	0	<5	25	42	3853	19	1933	1901	485	4338	17%
65+	>50	0	<5	50	50	11888	10	5376	6502	663	12551	49%
Total	114	0	5	109	161	23510	74	10995	12441	2016	25526	100%
Percentage[2]	41%	0%	4%	96%	59%	92%	0%	47%	53%	8%		

[1]Table 1 includes specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Cumulative data include updates to previous weeks.
[2]Percentage of tests positive for sub-types of influenza A are a percentage of all influenza A detections.
[3]UnS: unsubtyped: The specimen was typed as influenza A, but no result for subtyping was available.
Specimens from NT, YT, and NU are sent to reference laboratories in the provinces

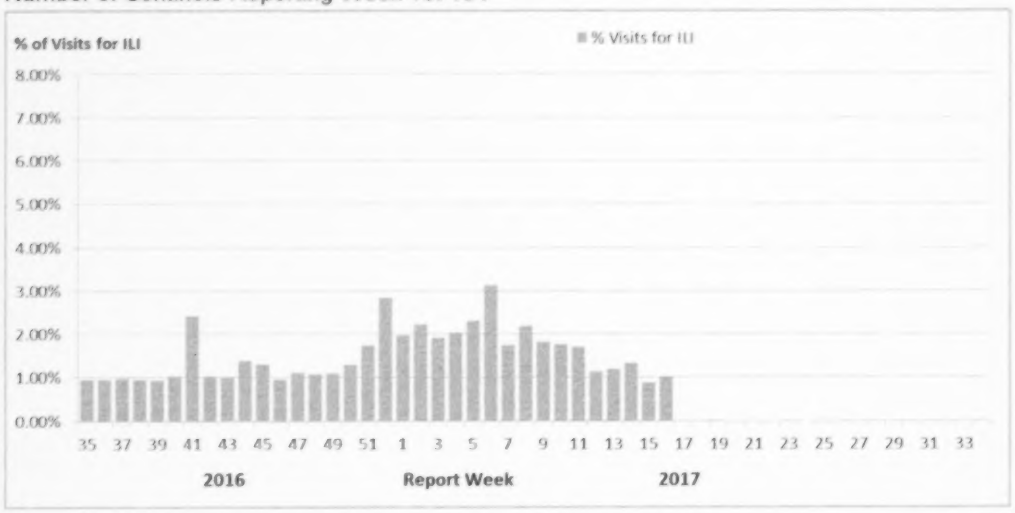
Syndromic/Influenza-like Illness Surveillance

Healthcare Professionals Sentinel Syndromic Surveillance

In week 16, 1.0% of visits to healthcare professionals were due to influenza-like illness, an increase compared to the percentage of visits reported in week 15.

Figure 4 – Percentage of visits for ILI reported by sentinels by report week, Canada, 2016-17

Number of Sentinels Reporting Week 16: 104



Delays in the reporting of data may cause data to change retrospectively. In BC, AB, and SK, data are compiled by a provincial sentinel surveillance program for reporting to FluWatch. Not all sentinel physicians report every week.

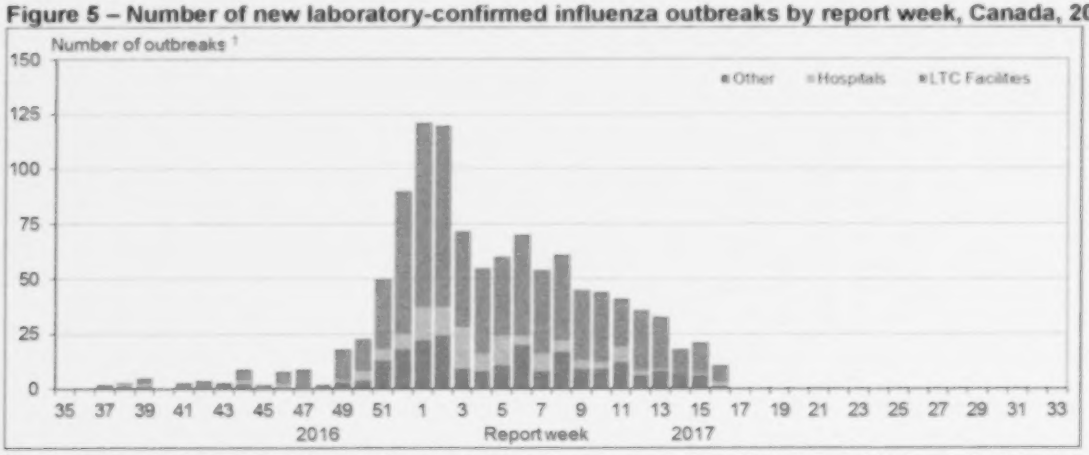
Are you a primary healthcare practitioner (General Practitioner, Nurse Practitioner or Registered Nurse) interested in becoming a FluWatch sentinel? Please visit our Influenza Sentinel page for more details.

Influenza Outbreak Surveillance

In week 16, 11 laboratory-confirmed influenza outbreaks were reported, fewer than in the previous week. Of the four outbreaks with known strains or subtypes: two were due to influenza A and two were due to influenza B. One additional outbreak due to ILI was reported in a school daycare.

To date this season, 1,119 outbreaks have been reported and the majority (66%) have occurred in LTC facilities. A total of 59 outbreaks (8%) due to influenza B have been reported. During the same period in the most recent previous A(H3N2) predominant season (2014-15), 1,671 outbreaks were reported, of which 74% occurred in LTC facilities.

Figure 5 – Number of new laboratory-confirmed influenza outbreaks by report week, Canada, 2016-17, Week 16



†All provinces and territories except NU report influenza outbreaks in long-term care facilities. All provinces and territories with the exception of NU and QC report outbreaks in hospitals. Outbreaks of influenza or influenza-like-illness in other facilities are reported to FluWatch but reporting varies between jurisdictions.Outbreak definitions are included at the end of this report.

Provincial/Territorial Influenza Hospitalizations and Deaths

In week 16, 121 influenza-associated hospitalizations were reported by participating provinces and territories*, an increase from 101 reported in the previous week. The weekly percentage of influenza B associated hospitalizations has been increasing since week 02, although the proportion declined slightly to 50% of hospitalizations in week 16 compared to 57% in week 15. The largest proportion of hospitalizations was among adults aged 65+ years (69%). Seven intensive care unit (ICU) admissions and 15 deaths were reported in week 16.

To date this season, 6,026 hospitalizations have been reported, of which 92% were due to influenza A. Among cases for which the subtype of influenza A was reported, 99% were influenza A(H3N2). Adults 65+ accounted for 68% of the hospitalizations. A total of 236 ICU admissions and 346 deaths have been reported. The majority of deaths (88%) were reported in adults aged 65+ years.

Table 2 – Cumulative number of hospitalizations, ICU admissions and deaths by age and influenza type reported by participating provinces and territories, Canada, 2016-17, Week 16

Age Groups (years)	Cumulative (August 28, 2016 to April 22, 2017)						
	Hospitalizations			ICU Admissions		Deaths	
	Influenza A Total	Influenza B Total	Total [# (%)]	Influenza A and B Total	%	Influenza A and B Total	%
0-4	436	50	486 (8%)	15	6%	<5	x%
5-19	234	51	285 (5%)	15	6%	<5	x%
20-44	289	24	313 (5%)	23	10%	5	1%
45-64	743	84	827 (14%)	70	30%	34	10%
65+	3857	258	4115 (68%)	113	48%	304	88%
Total	5559	467	6026 (100%)	236	100%	346	100%

x: Supressed to prevent residual disclosure

*Note: Influenza-associated hospitalizations are not reported to PHAC by BC, NU, and QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not distinguished among hospital admissions reported from ON. The hospitalization or death does not have to be attributable to influenza, a positive laboratory test is sufficient for reporting.

Sentinel Hospital Influenza Surveillance

Pediatric Influenza Hospitalizations and Deaths

In week 16, 11 laboratory-confirmed influenza-associated pediatric (≤16 years of age) hospitalizations were reported by the Immunization Monitoring Program Active (IMPACT) network, of which 7 were associated with influenza B. In keeping with influenza activity this season, pediatric hospitalizations have been declining since the peak in early January, and the proportion of cases due to influenza B has increased in March and April. The number of weekly hospitalizations has been below the six year average since early February (Figure 7).

To date this season, 524 laboratory-confirmed influenza-associated pediatric hospitalizations were reported by the IMPACT network. Children aged 0-23 months accounted for approximately 38% of hospitalizations and influenza A accounted for 85% of the reported hospitalizations. Among the 79 hospitalizations due to influenza B, 40 (51%) were in children over the age of 5 years. In comparison, children over the age of 5 years accounted for 33% of influenza A hospitalizations. Additionally, 87 intensive care unit (ICU) admissions have been reported. Children aged 0-23 months accounted for 26% of ICU cases, and children aged 10-16 years for 30%. A total of 60 ICU cases (70%) reported at least one underlying condition or comorbidity. Less than five deaths have been reported this season.

Figure 6 – Cumulative numbers of pediatric hospitalizations (≤16 years of age) with influenza by age-group reported by the IMPACT network, Canada, 2016-17, Week 16

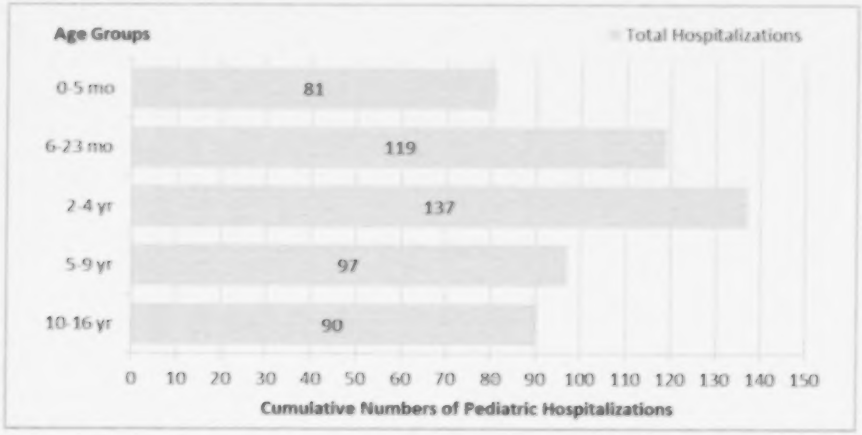
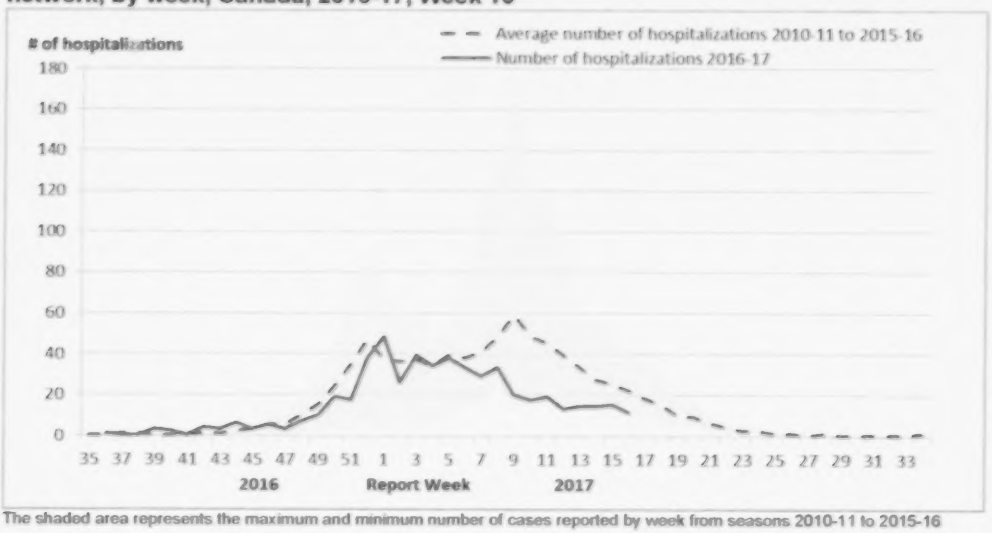


Figure 7 – Number of pediatric hospitalizations (≤16 years of age) with influenza reported by the IMPACT network, by week, Canada, 2016-17, Week 16



The shaded area represents the maximum and minimum number of cases reported by week from seasons 2010-11 to 2015-16

The number of hospitalizations reported through IMPACT represents a subset of all influenza-associated pediatric hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Adult Influenza Hospitalizations and Deaths

In week 16, 16 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations were reported by the Canadian Immunization Research Network (CIRN), half as many as in the week before. The proportion of hospitalizations associated with influenza B continues to increase and was 81% in week 16. The majority of cases (69%) occurred in adults aged 65+.

To date this season, 1,505 laboratory-confirmed influenza-associated adult (≥20 years of age) hospitalizations have been reported by CIRN. Influenza A accounted for 92% of hospitalizations. Adults aged 65+ accounted for 78% of hospitalizations. To date, 113 intensive care unit (ICU) admissions have been reported. Among cases with available data, 85 ICU cases (91%) reported at least one underlying condition or comorbidity. The median age of patients admitted to the ICU was 69 years. Approximately 70 deaths have been reported this season, the majority in adults aged 65+. The median age of reported deaths was 85 years.

Figure 8 - Cumulative numbers of adult hospitalizations (≥20 years of age) with influenza by type and age-group reported by CIRN, Canada, 2016-17, Week 16

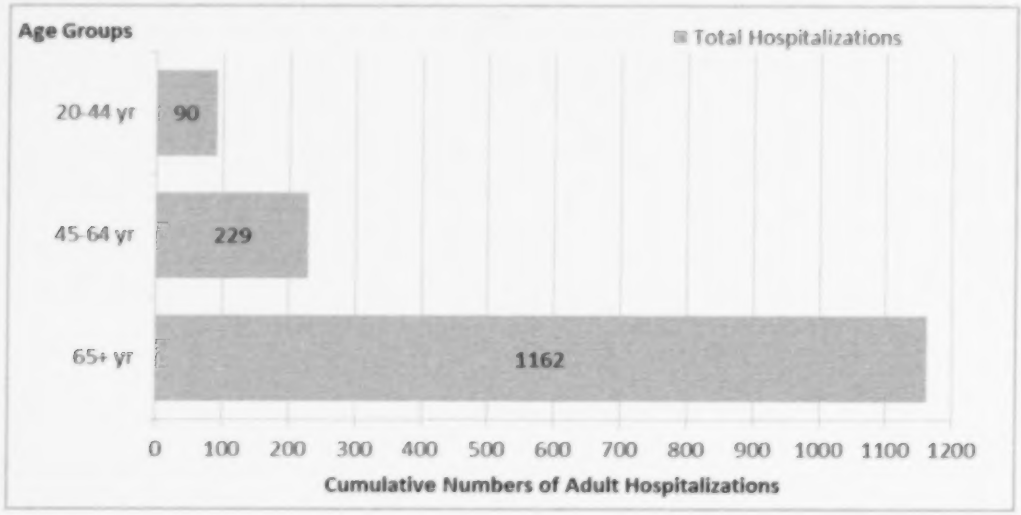
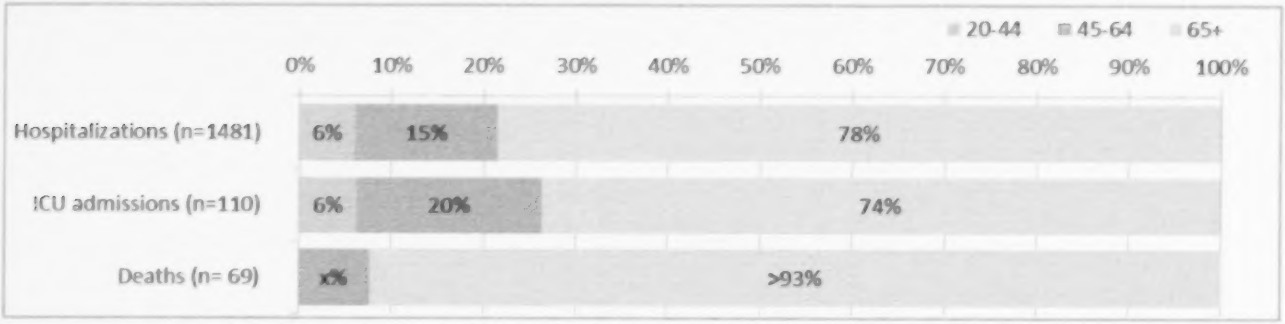


Figure 9 – Percentage of hospitalizations, ICU admissions and deaths with influenza by age-group (≥20 years of age) reported by CIRN, Canada 2016-17, Week 16



The number of hospitalizations reported through CIRN represents a subset of all influenza-associated adult hospitalizations in Canada. Delays in the reporting of data may cause data to change retrospectively.

Influenza Strain Characterizations

During the 2016-17 influenza season, the National Microbiology Laboratory (NML) has characterized 1,723 influenza viruses [1466 A(H3N2), 36 A(H1N1), 221 influenza B]. All but one influenza A virus (n=1465) and 52 influenza B viruses characterized were antigenically or genetically similar to the vaccine strains included in both the trivalent and quadrivalent vaccines. One hundred and sixty-nine influenza B viruses were similar to the strain which is only included in the quadrivalent vaccine.

Table 3 – Influenza strain characterizations, Canada, 2016-17, Week 16

Strain Characterization Results[1]	Count	Description
Influenza A (H3N2)		
Antigenically A/Hong Kong/4801/2014-like	350	Viruses antigenically similar to A/Hong Kong/4801/2014, the A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine.
Genetically[2] A/Hong Kong/4801/2014-like	1115	Viruses belonging to genetic group 3C.2a. A/Hong Kong/4801/2014-like virus belongs to genetic group 3C.2a and is the influenza A(H3N2) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent vaccine. Additionally, genetic characterization of the 350 influenza A (H3N2) viruses that underwent HI testing determined that 288 viruses belonged to genetic group 3C.2a and 62 viruses belonged to genetic group 3C.3a. The majority of viruses belonging to genetic group 3C.3a are inhibited by antisera raised against A/Hong Kong/4801/2014[3].
Antigenically A/Indiana/10/2011-like[4]	1	Viruses antigenically similar to A/Indiana/10/2011, a candidate H3N2v vaccine virus.
Influenza A (H1N1)		
A/California/7/2009-like	36	Viruses antigenically similar to A/California/7/2009, the A(H1N1) component of the 2016-17 Northern Hemisphere's trivalent and quadrivalent influenza vaccine.
Influenza B		
B/Brisbane/60/2008-like (Victoria lineage)	52	Viruses antigenically similar to B/Brisbane/60/2008, the influenza B component of the 2016-17 Northern Hemisphere's **trivalent** and **quadrivalent** influenza vaccine.
B/Phuket/3073/2013-like (Yamagata lineage)	169	Viruses antigenically similar to B/Phuket/3073/2013, the additional influenza B component of the 2016-17 Northern Hemisphere **quadrivalent** influenza vaccine.

[1]The NML receives a proportion of the influenza positive specimens from provincial laboratories for strain characterization and antiviral resistance testing. Strain characterization data reflect the results of hemagglutination inhibition (HI) testing compared to the reference influenza strains recommended by WHO.
[2]Determined by sequence analysis.
[3]WHO - Recommended composition of the influenza virus vaccines for use in the 2016-17 northern hemisphere influenza season.
[4]Detected in epidemiological week 50. For more details, see Week 50 report.

Antiviral Resistance

During the 2016-17 season, the National Microbiology Laboratory (NML) has tested 971 influenza viruses for resistance to oseltamivir, 970 influenza viruses for resistance to zanamivir and 213 influenza viruses for resistance to amantadine. All but two influenza A(H3N2) viruses were sensitive to oseltamivir and all viruses were sensitive to zanamivir. All 213 influenza A viruses were resistant to amantadine (Table 4).

Table 4 – Antiviral resistance by influenza virus type and subtype, Canada, 2016-17, Week 16

Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	721	2 (0.3%)	720	0 (0%)	183	183 (100%)
A (H3N2v)	1	0 (0%)	1	0 (0%)	1	1 (100%)
A (H1N1)	35	0 (0%)	34	0 (0%)	29	29 (100%)
B	214	0 (0%)	215	0 (0%)	NA[1]	NA[1]
TOTAL	971	2 (0.2%)	970	0 (0%)	213	213 (100%)

[1]NA: Not Applicable

Provincial and International Influenza Reports

- World Health Organization influenza update
- World Health Organization FluNet
- WHO Influenza at the human-animal interface
- Centers for Disease Control and Prevention seasonal influenza report
- European Centre for Disease Prevention and Control - epidemiological data
- South Africa Influenza surveillance report
- New Zealand Public Health Surveillance
- Australia Influenza Report
- Pan-American Health Organization Influenza Situation Report
- Alberta Health – Influenza Surveillance Report
- BC - Centre for Disease Control (BCCDC) - Influenza Surveillance
- New Brunswick – Influenza Surveillance Reports
- Newfoundland and Labrador – Surveillance and Disease Reports
- Nova Scotia - Flu Information
- Public Health Ontario – Ontario Respiratory Pathogen Bulletin
- Manitoba – Epidemiology and Surveillance – Influenza Reports
- Saskatchewan – influenza Reports
- PEI – Influenza Summary

FluWatch Definitions for the 2016-2017 Season

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

Influenza-like-illness (ILI): Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

ILI/Influenza outbreaks

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Workplace: Greater than 10% absenteeism on any day which is most likely due to ILI.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. closed communities.

Note that reporting of outbreaks of influenza/ILI from different types of facilities differs between jurisdictions.

Influenza/ILI Activity Levels

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* ;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region†**

4 = Widespread: (1) evidence of increased ILI*;
(2) lab confirmed influenza detection(s);
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region†**

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

** More than just sporadic as determined by the provincial/territorial epidemiologist.*

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Government of Canada Influenza webpage. Ce rapport est disponible dans les deux langues officielles.